CLAIMS

1. A human/machine interface for a machine vision system having an image element that generates image data based upon a viewed object comprising:

a processing element and a memory operatively connected to the image element and including (a) a machine vision tool for performing a machine vision process on the image data and (b) a software process for compressing and reformatting the image data and information from the machine vision tool into a web-browser-compatible form for transmission over a communications interface, interconnected to the processing element, to a human/machine interface device having a display, the web-browser-compatible image data and information being adapted for display on the human/machine interface device, and wherein the human/machine interface device is adapted to display web-browser-compatible image data and the information on a plurality of user-selected screens associated with the machine vision tool, and wherein the processing element is adapted to perform a machine vision tool task while the human/machine interface device is disconnected from the communications interface; and

wherein the processing element includes a web server and wherein the human/machine interface device comprises a computer having a generic web browser and the screens comprise web pages.

2. The human/machine interface as set forth in claim 1 wherein the screens include buttons for selecting predetermined functions for at least one of installing, configuring, training, monitoring and controlling the machine vision system.

3. The human/machine interface as set forth in claim 1 wherein the software process includes a data compression and reformatting process for the image data that causes the image data to be transmitted in compressed form over the communications interface.

4. A human/machine interface for a machine vision system having an image element that generates image data based upon a viewed object comprising:

a processing element and a memory operatively connected to the image element and including (a) a machine vision tool for performing a machine vision process on the image data and (b) a software process for transmitting the image data and information from the machine vision tool over a communications interface, interconnected to the processing element, to a human/machine interface device having a display, and the image data and information being adapted for display on the human/machine interface device, and wherein the human/machine interface device is adapted to display the image data and the information on a plurality of user-selected screens associated with the machine vision tool, and wherein the processing element is adapted to perform a machine vision tool task while the human/machine interface device is disconnected from the communications interface; and

wherein the human/machine interface device comprises a personal digital assistant (PDA).

5. The human/machine interface as set forth in claim 4 wherein the communication interface includes support for data transmission to a PDA over one of a wireless link and a cable link.

6. The human/machine interface as set forth in claim 4 wherein the human/machine interface device includes a generic machine vision application residing thereon and the processing element is adapted to install a specialized machine vision application over the communications interface to the human/machine interface device.

7. The human/machine interface as set forth in claim 4 wherein the machine vision tool includes a process that determines an intensity distribution of the image data and that transmits information with respect to the determined intensity distribution, and wherein the human/machine interface device includes a process for displaying, based upon the information, a visual representation of the intensity distribution so as to assist in adjusting at least one of lighting intensity, shutter exposure time, lens aperture, and parameters affecting the intensity distribution in the image data.

8. The human/machine interface as set forth in claim 4 wherein the machine vision tool includes a process that determines a relative degree of focus of the image data and that transmits encoded information with respect to the determined relative degree of focus, and wherein the human/machine interface device includes a process for displaying, based upon the encoded information, a current focus value so as to assist in adjusting focus.

9. The human/machine interface as set forth in claim 8 wherein the current focus value is displayed as a function of time.

10. The human/machine interface as set forth in claim 8 wherein the human/machine interface device includes a display that is insufficient in resolution and refresh rate to provide a real time display for adjusting either of focus or aperture of lens of the image element.

11. The human/machine interface as set forth in claim 4 wherein the software process includes a data compression and reformatting process for the image data that causes the image data to be transmitted in compressed form over the communications interface.

12. A method for interfacing with a machine vision system having an image element that generates image data based upon a viewed object, the method comprising the steps of:

providing a processing element and a memory operatively connected to the image element and including (a) a machine vision tool for performing a machine vision process on the image data and (b) a software process for providing the image data in a web-browser-compatible form and for creating information for constructing interface web pages associated with operation of the machine vision tool;

transmitting the image data and information over a communications interface, interconnected to the processing element, to a human/machine interface device having a display and a generic web browser application;

receiving the image data and information and displaying, on the human machine interface device, the image data and information on a plurality of user-selected screens, each of the screens comprising a web page; and

performing, with the processing element, a machine vision tool task while the human/machine interface device is disconnected from the communications interface.

13. The method as set forth in claim 12 wherein further comprising transferring configuration information from the human/machine interface device to the memory over the communications interface.

14. The method as set forth in claim 13 wherein the step of transferring configuration information includes providing training information to the memory.

15. The method as set forth in claim 14 wherein the step of displaying includes monitoring a live image acquired by the image element based upon the image data and information.

16. The method as set forth in claim 12 further comprising (a) establishing a link between the human/machine interface device and the communications interface, (b) at least one of installing, configuring, training or monitoring the machine vision system by exchanging information over the link; and (c) removing the link.

17. The method as set forth in claim 16 wherein the step of establishing the link comprises opening web pages on the human/machine interface based upon a web server in the machine vision system that interacts with the communications interface to convert the image data and information into web-based data packets.

18. The method as set forth in claim 12 further comprising communicating control information to a remote device through the communication interface so as to direct a device function in accordance with a predetermined instruction of the machine vision tool.

19 The human/machine interface as set forth in claim 12 wherein the software process includes a data compression and reformatting process for the image data that causes the image data to be transmitted in compressed form over the communications interface.

20. A method for interfacing with a machine vision system having an image element that generates image data based upon a viewed object, the method comprising the steps of:

providing a processing element and a memory operatively connected to the image element and including (a) a machine vision tool for performing a machine vision process on the image data and (b) a software process for providing the image data in a transmittable form and for creating information for constructing interface screens associated with operation of the machine vision tool;

transmitting the compressed and reformatted image data and information over a communications interface, interconnected to the processing element, to a human/machine interface device, the human/machine interface comprising a personal digital assistant (PDA) having a display and a graphical user interface (GUI);

receiving the compressed and reformatted image data and information and displaying, on the human machine interface device, the compressed and reformatted image data and information on a plurality of user-selected screens associated with the machine vision tool; and

performing, with the processing element, a machine vision tool task while the human/machine interface device is disconnected from the communications link.

21. The method as set forth in claim 20 wherein the step of transmitting includes providing the image data and information over one of a wireless link and a cable link.

22. The method as set forth in claim 20 further comprising (a) establishing a link between the human/machine interface device and the communications interface, (b) at least one of installing, configuring, training or monitoring the machine vision system by exchanging information over the link; and (c) removing the link.

23. The method as set forth in claim 20 further comprising transferring a machine vision application from the memory over the link to the human machine interface device and installing the loadable machine vision application on the human/machine interface so as to interface with the machine vision system using the loadable machine vision application.

24. The method as set forth in claim 20 further comprising communicating control information to a remote device through the communication interface so as to direct a device function in accordance with a predetermined instruction of the machine vision tool.

25. The human/machine interface as set forth in claim 20 further comprising determining, with the machine vision tool, an intensity distribution of the image data and transmitting information with respect to the determined intensity distribution, and displaying, based upon the information, a visual representation of the intensity distribution with the human/machine interface device so as to assist in adjusting at least one of lighting intensity, shutter exposure time, lens aperture, and parameters affecting the intensity distribution in the image data.

26. The human/machine interface as set forth in claim 20 further comprising determining, with the machine vision tool, a relative degree of focus of the image data and transmitting encoded information with respect to the determined relative degree of focus, and displaying, based upon the encoded information, a current focus value with the human/machine interface device so as to assist in adjusting focus.

27. The human/machine interface as set forth in claim 26 wherein the step of displaying the current focus value includes displaying the current focus value as a function of time.

28. The human/machine interface as set forth in claim 20 wherein the software process includes a data compression and reformatting process for the image data that causes the image data to be transmitted in compressed form over the communications interface.